

Input Profitability Analysis

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Input profitability analysis

. . . A necessary early step in developing and
sustaining successful input promotion and
market development programs

What is input profitability analysis?

- Financial incentives/net returns to farmers
- Economic benefits/comparative advantage
- Examples of input profitability analyses
 - Calculating a value/cost ratio for fertilizer use
 - Enterprise/whole farm budget analysis of improved technologies
 - Comparing returns to investing in improved agricultural technology versus investing in non-farm activities
 - Assessing the economic (“social”) costs and benefits of increased input use

Why is profitability analysis important?

- Profitability analysis should be the first step in designing:
 - Input promotion programs
 - Input market development programs
- Reforms have created a need for frequent updating of profitability assessments
 - Farmers now bear risks formerly covered by government
 - Input/output prices are more variable now
 - Traders need help in locating and estimating demand
 - Greater emphasis on financial sustainability and economic soundness means revisiting price and cost assumptions

Perspectives on profitability

- Input adoption is a function of:
 - Financial incentives to farmers (**demand**), i.e., returns to input use relative to returns from alternative investments
 - Farmers' capacity to purchase/use inputs, based on human and financial resources and ability to bear risk (**demand**)
 - Local availability of inputs (**supply**)
- Greater post-reform emphasis on availability than on incentives or capacity
 - Lack of availability sometimes interpreted as sign of market failure or "weak" private sector
 - Lack of farmer demand often seen as sign of inability to pay but may also reflect low relative returns due to:
 - inappropriate recommendations
 - inadequate farmer skills for adapting recommendations to their own circumstances

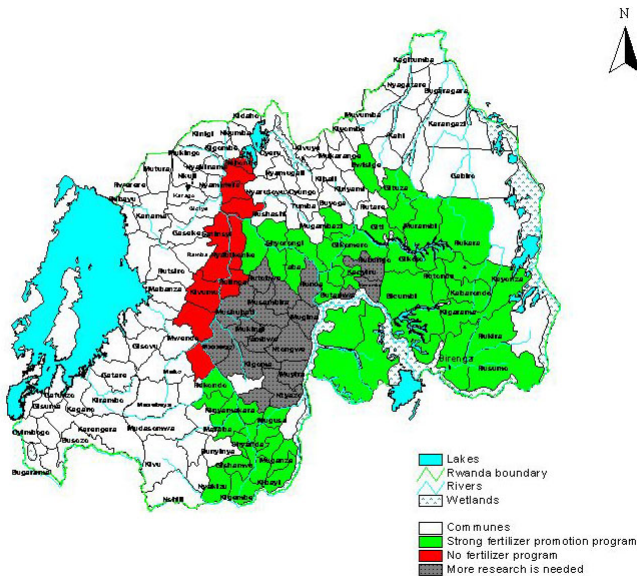
Recent uses of input profitability analysis in policy formulation

- **Rwanda**: Use of fertilizer response and market price data to update fertilizer profitability analyses and stimulate input market development
- **Zambia**: Similar approach, plus use of farm survey data to evaluate observed response rates and profitability
- **Ethiopia and Mozambique**:
 - Data collected on farm-level impact of SG2000 technologies (improved maize seed plus high levels of fertilizer)
 - Financial and economic analyses conducted
 - Determinants of yield response examined

Rwanda

- Background and prevailing policy situation
- Characteristics of analysis
- Integration into the policy process
- Outcomes

Sorghum : Recommendation for fertilizer promotion program in Rwanda



Summary of sorghum recommendations--Rwanda

Zone	Treatment	Fertilizer Response (kg/ha)	Markets	Sorghum Price (RwF/kg)	Value-Cost Ratio
Plateau du Sud	76 kg DAP	576	Butare	143/110	2.1
	78 kg Urea				
Plateau du Bumbogo-Buliza	90 kg DAP	1,357	Kigali-Ville	100	4.2
Plateau de l'Est	76 kg DAP	807	Kibungo	114/82	2.3
	78 kg Urea				
Bugesera	110 kg DAP	1,864	Nyamata	80	3.6
	80 kg Urea				

Zambia

- Fertilizer profitability assessed using research data on crop response, and alternative assumptions about input levels and input/output prices
- Results:
 - Cotton: zero of 15 cases had a value/cost ratio > 2
 - Maize: 3 of 16 cases had value/cost ratios > 2 ; all 3 used less than the recommended doses
- Limitations:
 - Range of application rates was relatively high (100-750 kg/ha)
 - Soil quality on research stations may not be typical of farm-level conditions

Zambia, cont.

- Low fertilizer profitability confirmed by production function analysis using recent farm survey data
- Current fertilizer policy in Zambia fails to address market development issues that keep fertilizer costs high
- Current fertilizer recommendations in Zambia fail to take into account
 - site-specific nature of input profitability
 - need to improve fertilizer efficiency (e.g., lower doses, conservation farming, organic/inorganic fertilizer combinations)

Experience with improving input profitability for smallholders

- Organic/inorganic fertilizer combinations
 - Technical evidence on input efficiency is good
 - Evidence on adoption is limited but increasing
 - Capacity of these fertilizer combinations to stimulate input market development is poorly understood
- Malawi's "best bet" technologies
 - Good idea but gives complex menu of options
 - More difficult for extension to implement; recent programs have returned to standard recommendations
- Participatory research may improve farmers' skills to adapt inputs to their own conditions

Analysis of SG2000 technologies

- Ethiopia:
 - Technology introduced into high potential zones
 - Maize package highly profitable financially under a range of yields and output prices
 - Maize economically profitable as import substitute; not clearly profitable if exported (to Kenya)
 - Recent events show major (80%) price declines due to surplus production and high marketing costs
 - So returns to farmers still risky despite high yields
 - Medium fertilizer levels often most profitable

Analysis of SG2000 tech., cont.

- Mozambique:
 - Yield impact and financial profitability more modest than in Ethiopia
 - High input levels not significantly more profitable than low input levels, and more risky
 - Profitability (financial and economic) more dependent on how maize was marketed:
 - If stored for later sale → higher net returns
 - If sold in capital as import substitute → often not profitable
 - If exported to nearby Malawi or Tanzania → often profitable

SG2000 lessons/conclusions

- Profitability of SG technology varied depending on:
 - how long after harvest maize was sold
 - fertilizer and transport costs
 - whether maize is valued as import substitute or as export
 - location of production zone relative to sale point
 - regional production conditions and trade prospects
- High-input technology can be successfully introduced; challenges are scaling-up and sustaining such programs
- Investments in institutions and infrastructure are needed to bring down marketing costs and risks

Conclusions/Recommendations

- Profitability analysis (PA) is an under-utilized ingredient in input policy analysis;
- Most PA is still done by donor-funded projects
- Need to develop local capacity for PA analysis and make results available to policy makers, farmers, and input suppliers
- PA should be situation-specific, incorporating local variability in yields, input/output price ratios, and risk
- Input recommendations and promotion programs should be profitability-based, and research on increasing input use efficiency supported when profitability is weak